BCA Curriculum Scheme and Structure (Semester Wise)

Semester-V (2017)

Course Code	Course Title	Marks		
		Internal	External	Total
BCA-SV-01	Software Engineering			100
BCA-SV-02	Data Communication and Computer Networks			100
BCA-SV-03	Computational Techniques			100
BCA-SV-04	Web Design and Microsoft .NET Technologies			100
BCA-SV-05	Lab-I Computational Techniques	25	25	50
BCA-SV-06	Lab-II Microsoft .NET Technologies	25	25	50

Proposed semester based syllabus for BCA to be effective from 2015

BCA 5th Semester

Course Code: BCA-SV-01

Course Title: Software Engineering

Unit- I:
Introduction to S/W engineering; software product and process: Generic Phases, software development models; Software architecture and design: prominent design methodologies;

Unit-II:
Software Process Management: Software process, phase's framework,
Capability maturity model integration (CMMI), Process patterns, process assessment, personal and team process models (PSP, TSP) process technology, characteristics of software process.

Unit- III:
Process Planning, Estimation, COCOMO Model, Project Scheduling and Tracking, Risk management (Concepts, Risk assessment, and Risk control)
Software Reengineering, Requirement Engineering, Verification & Validation, Software Reusability, & Performance Evaluation.

Unit- IV:
SW Configuration Management and maintenance; SW measurement-Size, Process and Project Metrics; LOC, FP metrics; Testing and the related concepts: Testability and features of Test Cases; Software Testing techniques: WBT,BBT, Software Testing Strategies: Approach, Issues; integration, System, alpha , Beta testing etc;

Reference Books:

1. Software Engineering, A Practitioners Approach, Press Man TATA Mc Graw Hill
2. A Systematic Approach to Software Engineering, Pankaj Jalot. Narosa Publication
3. Fundamentals of Software Engineering by Rajab Mall, PHI

Course Code: BCA-SV-02
Course Title: Data Communication and Computer Networks

Unit I

Key components in data communication systems. Simplified model. Data transmission concepts. Simplex, Half-Duplex, Full-Duplex. Concepts of Bandwidth and Channel Capacity –Shannon's Law. Example of a digital telephone system to explain basic concepts of analog signals, digital signals. Characteristics of signals (amplitude, frequency, period, wavelength). Signal-to-Noise ratio.

Unit II

Transmission media- factors affecting distance and data rate. Guided transmission media: Twisted-Pair, Co-axial Cable, Optical Fiber. Unguided transmission media: Terrestrial Microwave, Satellite Microwave. Communication Interface examples: RS232. Transmission of digital data as analog signal: ASK, FSK, PSK. Amplitude Modulation.

Unit III

Reliable transmission of data: Asynchronous and Synchronous transmission. Parity and CRC- based error detection. Error control & recovery techniques. HDLC and X.25 protocols. Multiplexing concepts: FDM, TDM. Network Classification: LAN, MAN, WAN, LAN topologies. ISDN – concepts and services (Primary, Basic).

Unit IV

Overview of the OSI model & comparison with TCP/IP reference model. Basic Internet Building Blocks: Gateways, Routers, Switches, Hubs, Repeaters. Concepts of datalink (Ethernet) address versus network (IPV4) address: IP address classes. Common network applications: FTP, TELNET, HTTP, STMP, Web-based E-mail & Search Engines.

Reference Books:

1. William Stallings, "Data and Computer Communications", 7th edition, Pearson.
2. Andrew Tanenbaum, "Computer Networks", 4th edition, Pearson Education.
3. Ulysses Black, "Principles of Data Communications", PHI. Morley, Gelber, "The Emerging Digital Future", Addison – Wesley.
4. Furouzan B, "Data Communication Networks",T.M.H

Proposed semester based syllabus for BCA to be effective from 2015

Course Code: BCA-SV-03

Course Title: Computational Techniques

UNIT-I

Introduction, Requirements for computer oriented solutions to numerical problems. Approximations & Errors Types of Programming Errors, Computer & Arithmetic Errors, Accuracy and Precision, Round off and Truncation Errors. Use of C Programming language for computer based numerical problem solving.

Unit-II

Algorithms to Compute Roots of Equation Methods of Tabulation or Brute Force Method, Method of Bisection, The Secant Method, Newton Raphson Method, Method for False Position. Programmatic Implementations of these methods.

UNIT-III

Algorithms to Solve Linear Algebraic Equations: Gauss Elimination, Gauss Jordan, Gauss Seidel, L.U. Decomposition. Algorithms for Curve Fitting: Least Square Approximation, Lagrange Interpolated Polynomial, Newton Divided Differences Interpolating Polynomial. Programmatic Implementations.

UNIT- IV

Algorithms to solve Ordinary Differential Equations – Euler Method and Modification.The trapezoidal Rule, Simpson's Rule.R K Method.Programmatic Implementations

Reference Books:

1. Computer Oriented Numerical Methods, V. Rajaramman - PHI
2. Numerical Methods for Engineering ,R P Canol, Tata Mc Graw Hill
3. Computer Oriented Numerical Methods, R.S. Salaria – Khanna Publishing Company
4. Elements of Computational Techniques – Ronald A. Thisted – Chapman & Hall/ CRC

Proposed semester based syllabus for BCA to be effective from 2015

Course Code: BCA-SV-04

Course Title: Web Design and Microsoft .NET Technologies

Unit- I

Internet & its Use Types of Internet Connectivity, World Wide Web, Telnet, File Transfer Protocol, Web Publishing, Web Hosting, Cyber Crime, Types of Cyber Crimes, Cookies, Web Server, Open Source Software Systems. Http Protocol

Unit- II

HTML: Structure of HTML, Tags, Character Entities, Hyperlinks, Frames, Tables, Lists, Forms, Limitations of HTML. CSS, Javascript Introduction to Javascript Frameworks. Ajax.

Unit –III:

Introduction to Microsoft.Net Framework ,COM and .NET, Common Language Runtime (CLR), Garbage Collection, Microsoft Intermediate Language (MSIL),Life Cycle of a Web Request, Introduction to Asp.NET, Session Management

Unit IV

C# Concepts: C# Concepts Language Elements: Constants, Variables and Data Types, Mathematical Operators, Logical Operators, Looping and Decision, Structures and Classes

Asp.Net Server Controls, Creating a basic Website, Introduction to Microsoft SQL Server. Connecting to SQL Server from Asp.Net Website

Reference Books:

1. Internet Applications and Web Designing by A.P. Publishers.
2. HTML, DHTML, JAVA Script, Perl, CGI by BPB Publications
3. Visual C# 2010 Wrox Publications
4. Asp.NET with C# Wrox Publications